

## 100811

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**Title:**

Director Area

R&D:	No
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Manager Group

Period of Performance:

**To:** 03/31/2010

CY1 to CY5

CYE

**Contract Year 7 (CY7) Cost Targets**

CY8

OUTYEARS

TOTAL

TOTAL COST AND FEE

1,532.89

6,097.11

**\$6,829,215**

50

**\$6,829,215**

4 303 30

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10

03-214-09  
03-214-09

DATE \_\_\_\_\_

DATE \_\_\_\_\_

2/4/08

3/16/09

DATE \_\_\_\_\_

DATE \_\_\_\_\_

17

Wm. W. Holt

3/17/2004

DATE \_\_\_\_\_

ACCEPTANCE ACKNOWLEDGEMENT BY CONSIGNEE

DATE \_\_\_\_\_

SIGNATURE Andrew Dennis / OP-ES / (321) 867-1174

3/23/00

SIGNATURE *Martin Cummins* Martin Cummins / USTDC / (321)867-5408

3/24/09



1. DOCUMENT NO(S)

TO Ref: SPI

TO No.: 00389

TO Rev: RFP

Plan Rev: A

Kennedy Space Center  
Document Continuation Sheet

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Title: CLV ML Umbilicals, Access Systems and VSDS Design Support

5. DATE:

and Mechanical Systems required for the ML to support the Constellation Program.

Multiple design teams will be led by the NASA LDE. The contractor shall support the designs, design reviews and meetings as required.

Tracking of hours and ODC will be done at the subtask level.

Project Management & Project Administration support will be tracked as subtask 001  
Engineering Management oversight will be tracked as subtask 002

Task 1.1 will be tracked as subtask 003

Task 1.2 will be tracked as subtask 004

Task 1.3 will be tracked as subtask 006

Task 1.4 will be tracked as subtask 007

Task 1.5 will be tracked as subtask 008

Task 1.6 will be tracked as subtask 009

Task 1.7 will be tracked as subtask 010

Task 2.1 will be tracked as subtask 011

Task 2.2 will be tracked as subtask 014

Task 3.0 will be tracked as subtask 012

Task 4.0 will be tracked as subtask 016

Task 5.0 will be tracked as subtask 015

Task 6.0 will be tracked as subtask 013

Task 7.0 will be tracked as subtask 021

Task 8.0 will be tracked as subtask 022

Task 9.0 will be tracked as subtask 023

Task 10.0 will be tracked as subtask 019

TO schedule support will be tracked as subtask 020

The preliminary requirements are defined by CxP 70000, *Constellation Architecture Requirements Document (CARD)*; CxP 70023, *Design Specification for Natural Environments*; CxP 70028, *Ground Systems to CEV Interface Requirements Document (IRD)*; CxP 70052, *Ground Systems to CLV IRD*; CxP 72034, *SRD* and CxP 72121, *GSE Requirements Document*.

All designs shall be in compliance with KSC-DE-512-SM *Facility, System and Equipment General Design Requirements* and NASA-STD-5005, *Standard for the Design of GSE*.

All drawings shall be compliant with GP-435, *Engineering Drawing Practices, Aerospace and GSE*.

**B. TASKS**

1.0 The contractor shall provide technical and engineering support for the design of the following Umbilical Systems during the 60%, 90%, and 100% design phase.

1.1 - US Aft Skirt LO2 Umbilical

1.2 - US Aft Skirt LH2 Umbilical

1.3 - US Instrument Unit Umbilical

1.4 - Service Module Umbilical

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<p>1.5 - FS Aft Skirt Electrical Umbilical</p> <p>1.6 - FS Aft Skirt GN2 Purge Umbilical</p> <p>1.7 - FS Forward Skirt Umbilical</p> <p>2.0 The contractor shall provide technical and engineering support for the design of the following <u>Access Systems</u> during the 60%, 90%, and 100% design phase.</p> <p>2.1 - Crew Access Arm</p> <p>2.2 - Access Arms</p> <p>3.0 The contractor shall provide technical and engineering support for the design of the <u>VSDS</u> during the 60%, 90%, and 100% design phase.</p> <p>4.0 The contractor shall provide technical and engineering support for <u>fluid systems</u> development. —</p> <p>5.0 The contractor shall provide technical and engineering support for the continued testing of a <u>Tilt-Up-Umbilical Arm (TUUA) prototype</u> .</p> <p>6.0 The contractor shall support the development and maintenance of Launch Accessory <u>Pro/E Models</u> (Parts and Assemblies) and the maintenance of the ML Pro/E Assembly Model.</p> <p>7.0 The contractor shall provide engineering and technical expertise to support the <u>fabrication of all Launch Accessories</u> listed.</p> <p>8.0 The contractor shall provide technical and engineering support for the <u>fabrication and installation of Launch Accessory Prototypes</u> , as required to support the various design efforts. Prototype design shall include all necessary equipment required to support the prototype and prototype testing.</p> <p>9.0 The contractor shall provide <u>Pro/E</u> ML GSE installation design support.</p> <p>10.0 The contractor shall provide <u>electrical engineering</u> support.</p> <p style="text-align: center;"><b><u>C. MILESTONES/DELIVERABLES</u></b></p> <p>1. - Support for 60% design review for US Aft Skirt LO2 Umbilical.  <b>Start Date</b> : 10/01/2008<b>End Date</b> : 01/12/2009</p> <p>2. - Support for 90% – 100% design review for US Aft Skirt LO2 Umbilical.  <b>Start Date</b> : 01/13/2009<b>End Date</b> : 08/14/2009</p> <p>3. - Support for 60% design review for CLV US Aft Skirt LH2 Umbilical.  <b>Start Date</b> : 10/01/2008<b>End Date</b> : 12/12/2008</p> <p>4. - Support for 90% – 100% design review for CLV US Aft Skirt LH2 Umbilical.  <b>Start Date</b> : 12/15/2008<b>End Date</b> : 07/31/2009</p> <p>5. - Support for 60% design review for CLV Instrument Unit Umbilical.  <b>Start Date</b> : 10/01/2008<b>End Date</b> : 11/12/2008</p> <p>6. - Support for 90% – 100% design review for CLV Instrument Unit Umbilical.  <b>Start Date</b> : 11/13/2008<b>End Date</b> : 06/30/2009</p>		

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7. - Support for 60% design review for CLV Service Module Umbilical.  
Start Date : 10/01/2008End Date : 01/27/2009
8. - Support for 90% - 100% design review for CLV Service Module Umbilical.  
Start Date : 01/28/2009End Date : 08/28/2009
9. - Support for 60% design review for FS Aft Skirt Electrical Umbilical.  
Start Date : 10/01/2008End Date : 04/29/2009
10. - Support for 90% - 100% design review for FS Aft Skirt Electrical Umbilical.  
Start Date : 04/30/2009End Date : 12/15/2009
11. - Support for 60% design review for FS Aft Skirt GN2 Purge Umbilical.  
Start Date : 10/01/2008End Date : 04/29/2009
12. - Support for 90% - 100% design review for FS Aft Skirt GN2 Purge Umbilical.  
Start Date : 04/30/2009End Date : 12/15/2009
13. - Support for 60% design review for FS Forward Skirt Umbilical.  
Start Date : 10/01/2008End Date : 02/27/2009
14. - Support for 90% - 100% design review for FS Forward Skirt Umbilical.  
Start Date : 03/02/2009End Date : 10/15/2009
15. - Support for 60% design review for CLV Crew Access Arm.  
Start Date : 10/01/2008End Date : 03/02/2009
16. - Support for 90% - 100% design review for CLV Crew Access Arm.  
Start Date : 03/03/2009End Date : 07/15/2009
17. - Support for 60% design review for ML Access Arms.  
Start Date : 10/01/2008End Date : 06/15/2009
18. - Support for 90% - 100% design review for ML Access Arms.  
Start Date : 06/16/2009End Date : 01/29/2010
20. - Support for 60% design review for VSDS.  
Start Date : 10/01/2008End Date : 02/12/2009
21. - Support for 90% - 100% design review for VSDS.  
Start Date : 02/13/2009End Date : 09/30/2009
22. - Project and Engineering Management support.  
Start Date : 10/01/2008End Date : 03/31/2010

**D. STANDARDS OF PERFORMANCE (METRICS)**

1. - Task Order metrics will be collected in accordance with the USTDC Internal Surveillance Plan.

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